



NASA Flight Opportunities

NASA's TechLeap Prize: Advancing Space Technologies and Innovative Teams

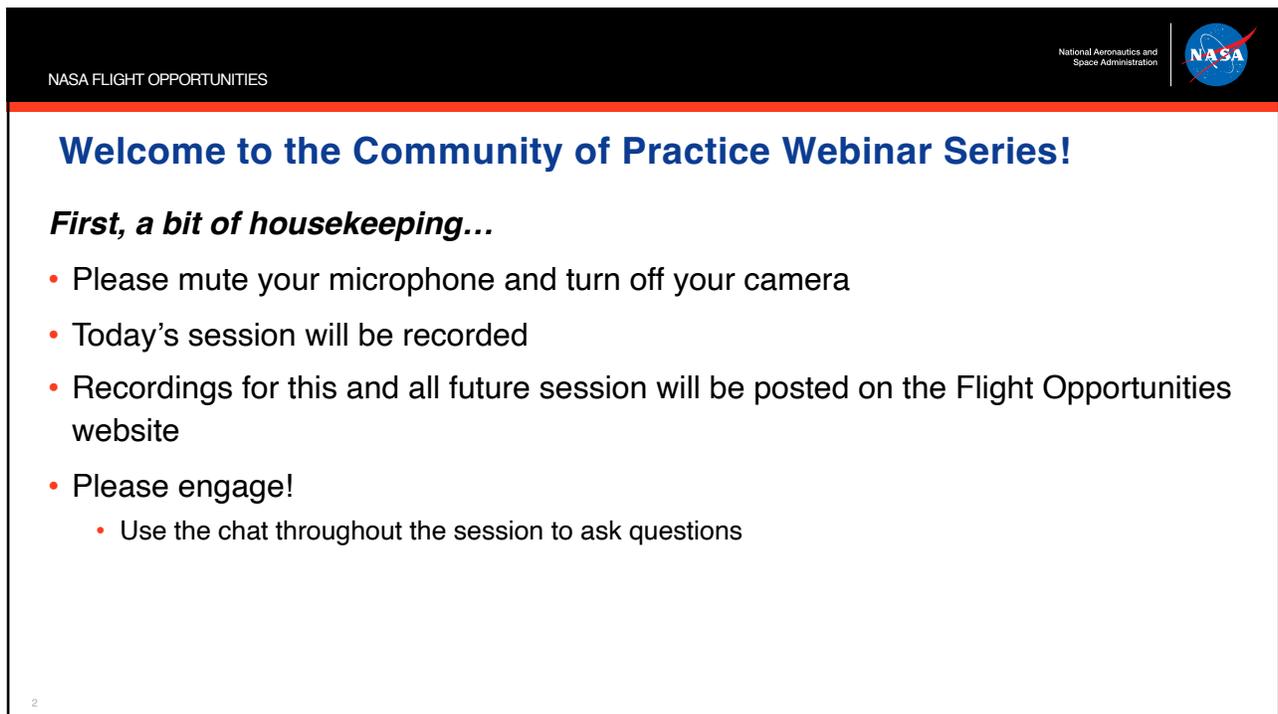
Sara Jennings, Chief Executive Officer, Orion Labs
Zachary Gaines, Student Lab Director, Cal Poly Pomona

Community of Practice Webinar Series – September 7, 2022

Session will start at 10 a.m. PT – Please mute your microphone and turn off your camera

www.nasa.gov

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NASA FLIGHT OPPORTUNITIES

NASA

Welcome to the Community of Practice Webinar Series!

First, a bit of housekeeping...

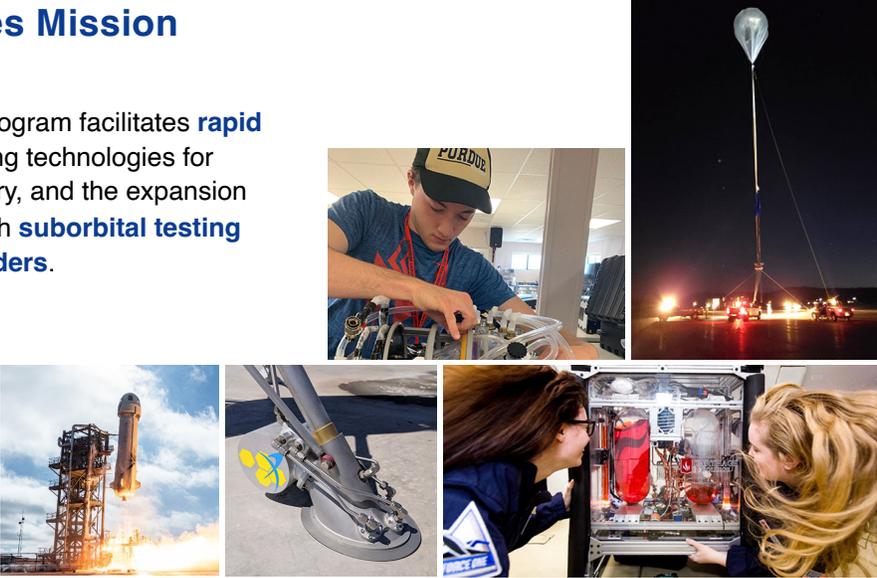
- Please mute your microphone and turn off your camera
- Today's session will be recorded
- Recordings for this and all future session will be posted on the Flight Opportunities website
- Please engage!
 - Use the chat throughout the session to ask questions

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NASA FLIGHT OPPORTUNITIES 

Flight Opportunities Mission

The Flight Opportunities program facilitates **rapid demonstration** of promising technologies for space exploration, discovery, and the expansion of space commerce through **suborbital testing with industry flight providers**.



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NASA FLIGHT OPPORTUNITIES 

Join us for future Community of Practice webinars!

Watch our website and newsletter for next month's topic

nasa.gov/directorates/spacotech/flightopportunities/newsletter

Future webinars

- Webinars are held 1st Wednesday of each month at 10 a.m. PT
- Topics will be announced in the Flight Opportunities newsletter and website
- Session recordings will be posted on the Flight Opportunities website
- Let us know session topics you would like to see covered

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NASA FLIGHT OPPORTUNITIES

NASA National Aeronautics and Space Administration

NASA's TechLeap Prize



- Designed to rapidly identify and test solutions to specific NASA technology needs
- Format allows NASA to select winners and flight test their technologies in less than a year
- Open to businesses, universities, entrepreneurs, and other innovators
- Previous awards have been up to \$650K to build payloads, plus access to a suborbital flight test
 - 2022: Nighttime Precision Landing Challenge No. 1
 - 2021: Autonomous Observation Challenge No. 1



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NASA FLIGHT OPPORTUNITIES

NASA National Aeronautics and Space Administration

Today's Speakers



Sara Jennings
Chief Executive Officer
Orion Labs



Zachary Gaines
Student Lab Director
Cal Poly Pomona

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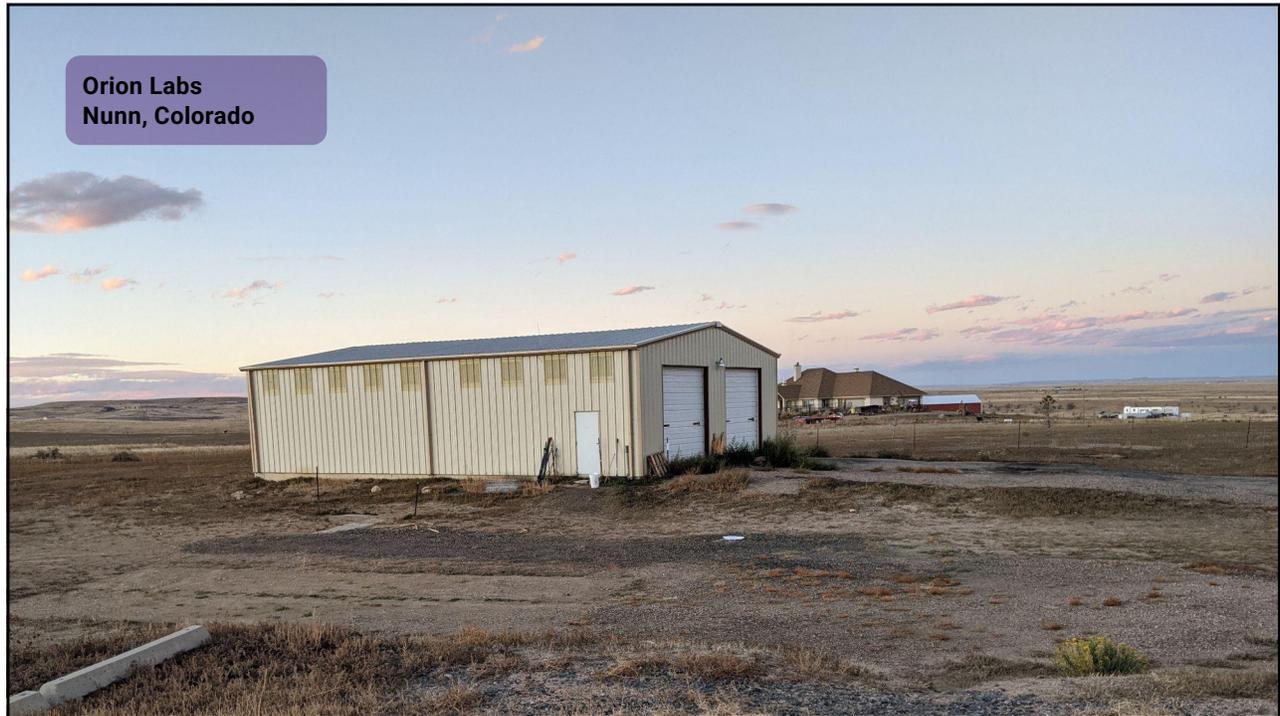
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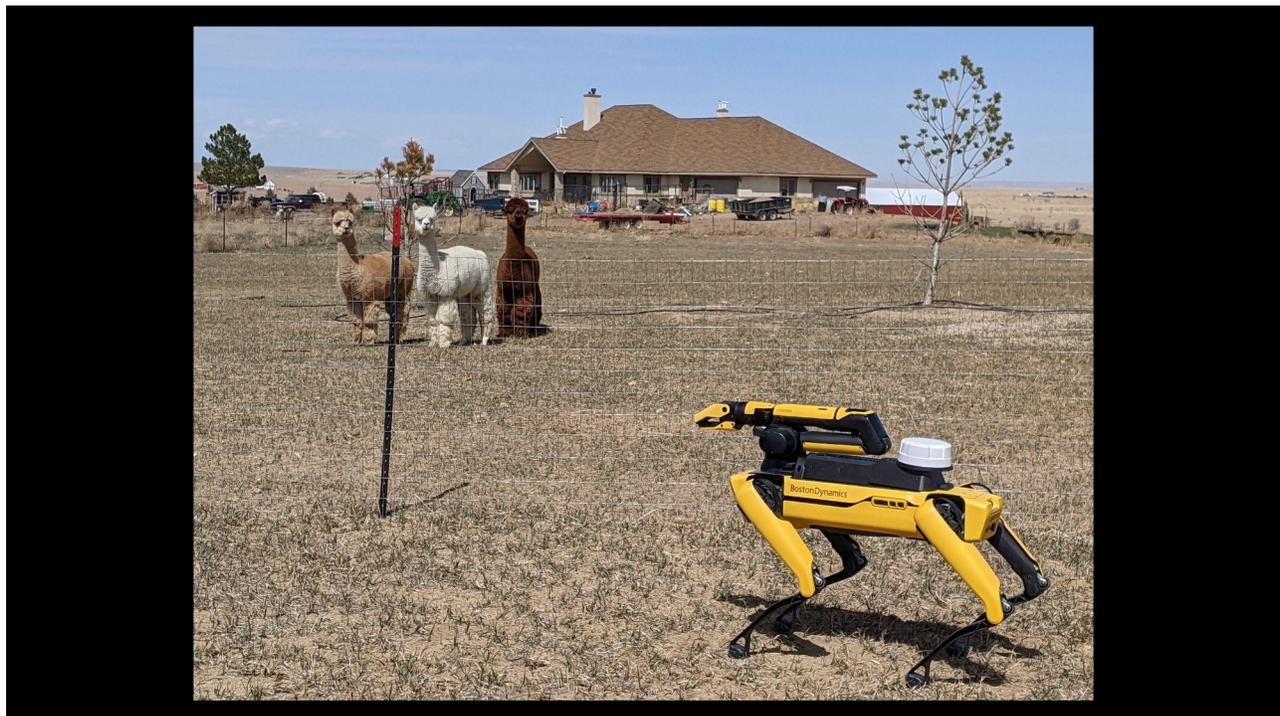
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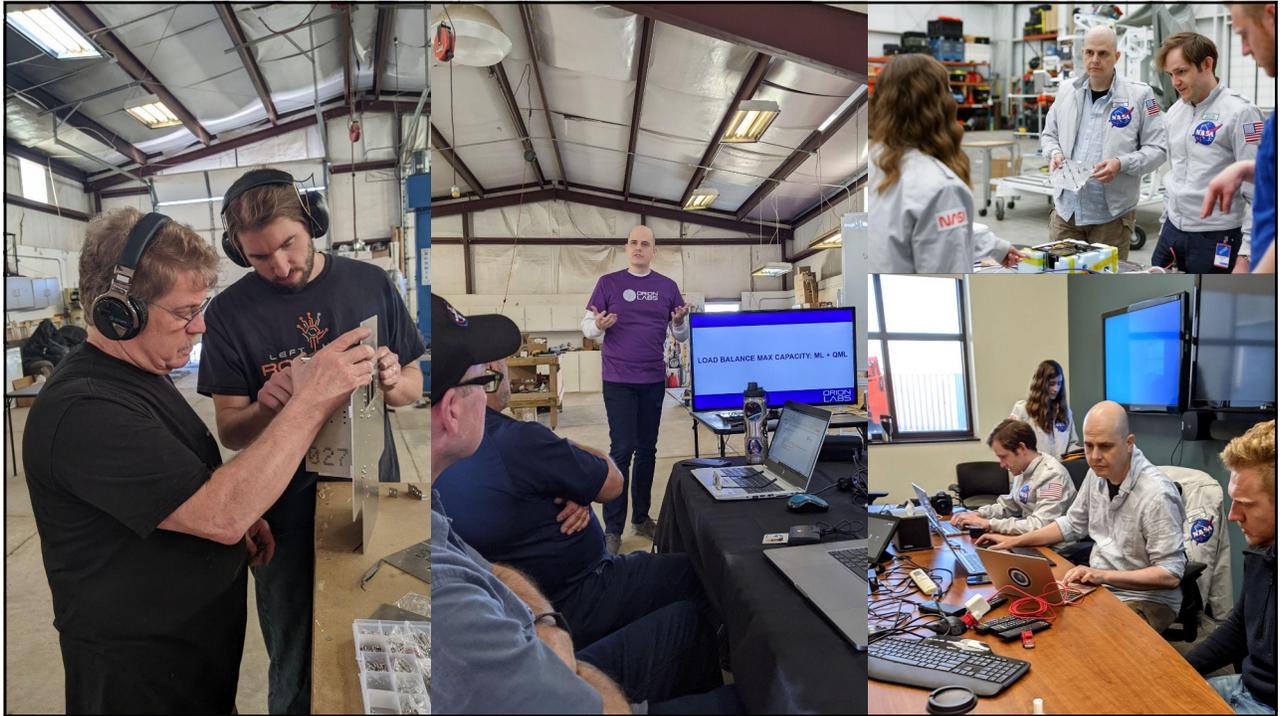
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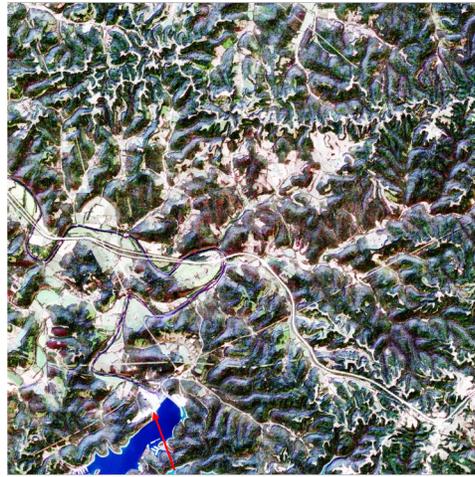


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EO1 - DAM DETECTION



I AM HERE



The screenshot shows the SEDAC website interface. At the top, it says 'EARTHDATA' and 'Other DAACs'. Below that is the 'SOCIOECONOMIC DATA AND APPLICATIONS CENTER (SEDAC)' logo, with a subtext 'A Data Center in NASA's Earth Observing System Data and Information System (EOSDIS) - Hosted by CIRES at Columbia University'. The navigation menu includes DATA, MAPS, THEMES, RESOURCES, SOCIAL MEDIA, ABOUT, and HELP. The main content area is titled 'Global Reservoir and Dam (GRanD), v1'. It features a 'Collection Overview' section with 'Dams, v1.01 (2011)' and tabs for 'Set Overview', 'Data Download', 'Maps', 'Map Services', and 'Metadata'. There is a 'Purpose' section, an 'Abstract' section, and a 'Global Reservoir and Dam Database: Dams' map. A sidebar on the left lists 'Data Sets (2)', 'Map Gallery (20)', 'Map Services (2)', 'Citations', 'Project Website', 'SEDAC Hazards', and 'Mapper'. A URL is provided at the bottom: <https://sedac.ciesin.columbia.edu/data/set/grand-v1-dams-rev01>

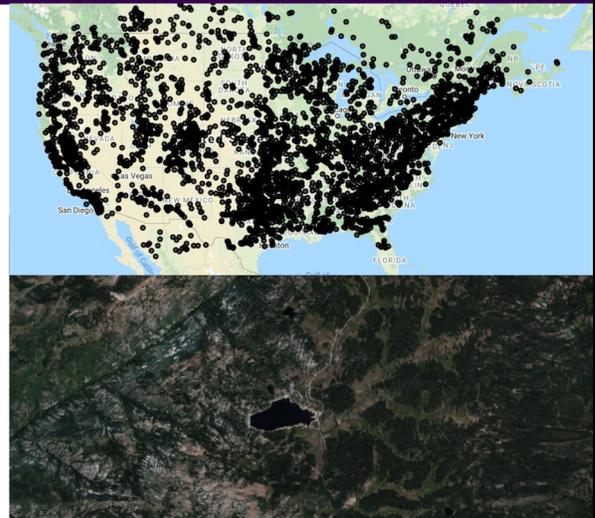
<https://sedac.ciesin.columbia.edu/data/set/grand-v1-dams-rev01>

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LABS

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CAMERA SIMULATOR - DATASETS

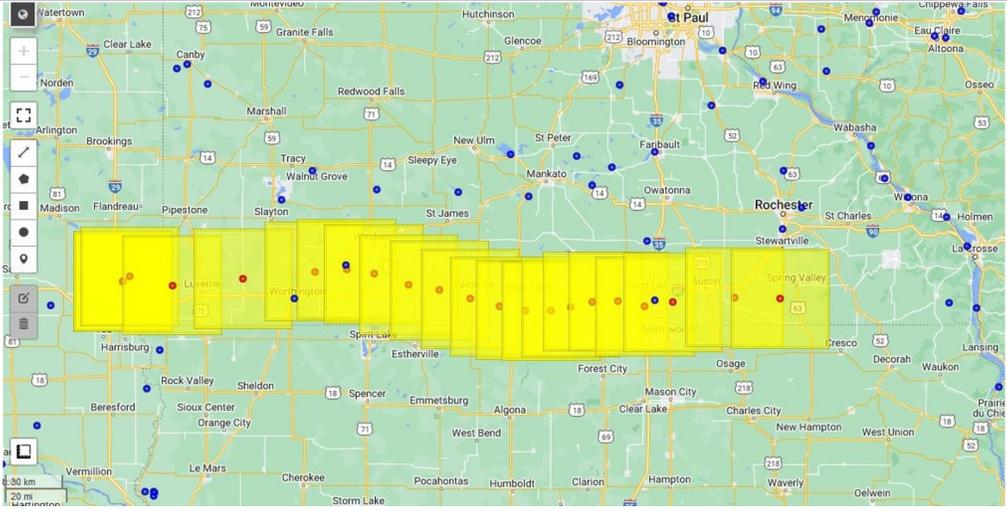
- Existing data of 40,000 dams around the world, ~5000 in the US.
- Use of **Sentinel & Landsat** data and Google Earth engine so generate image datasets for training, testing and validation of ML and QML
- Global multispectral coverage at 10 m/px



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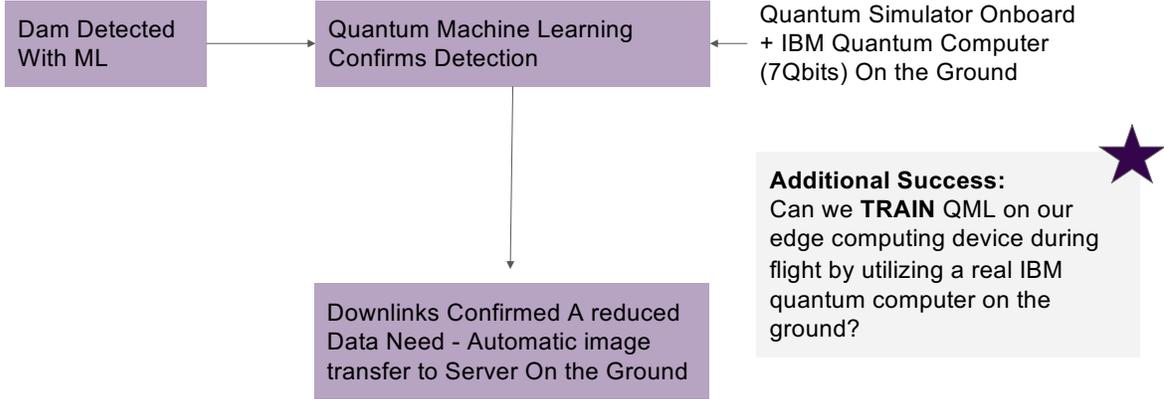
Flight SIMULATOR



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Quantum ML Pipeline



Dam Detected With ML → Quantum Machine Learning Confirms Detection

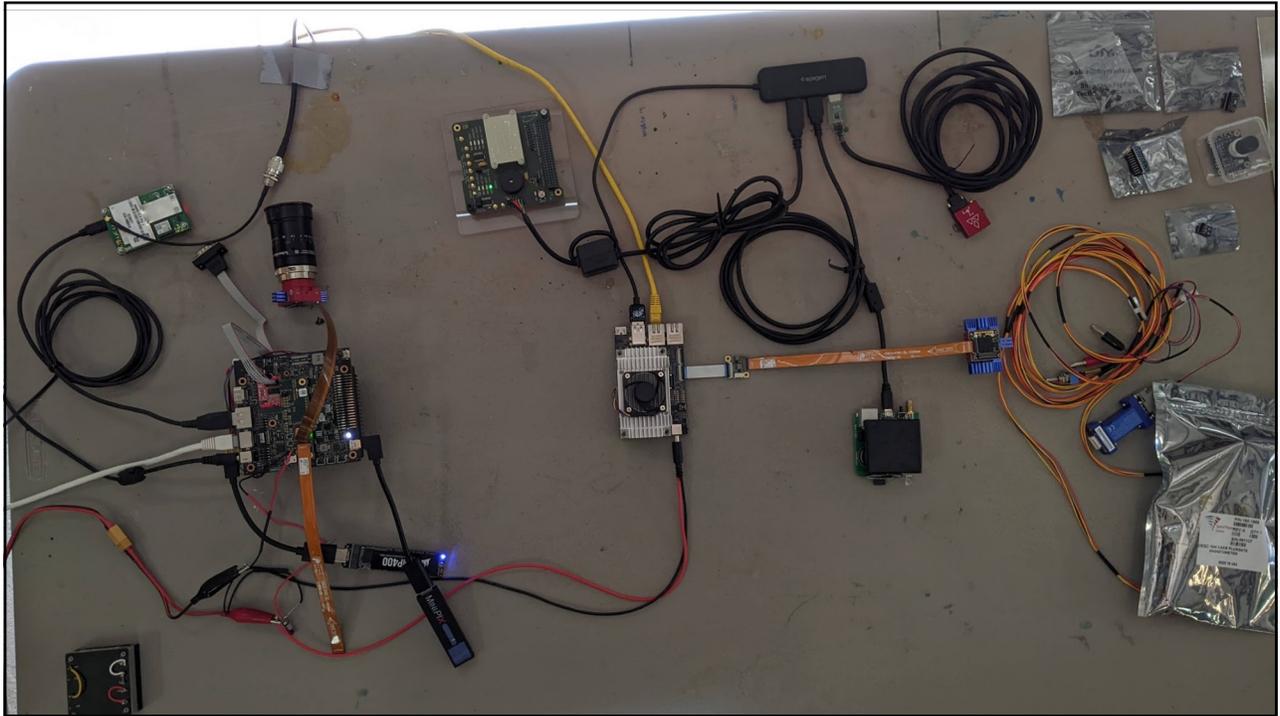
Quantum Simulator Onboard + IBM Quantum Computer (7Qbits) On the Ground

Downlinks Confirmed A reduced Data Need - Automatic image transfer to Server On the Ground

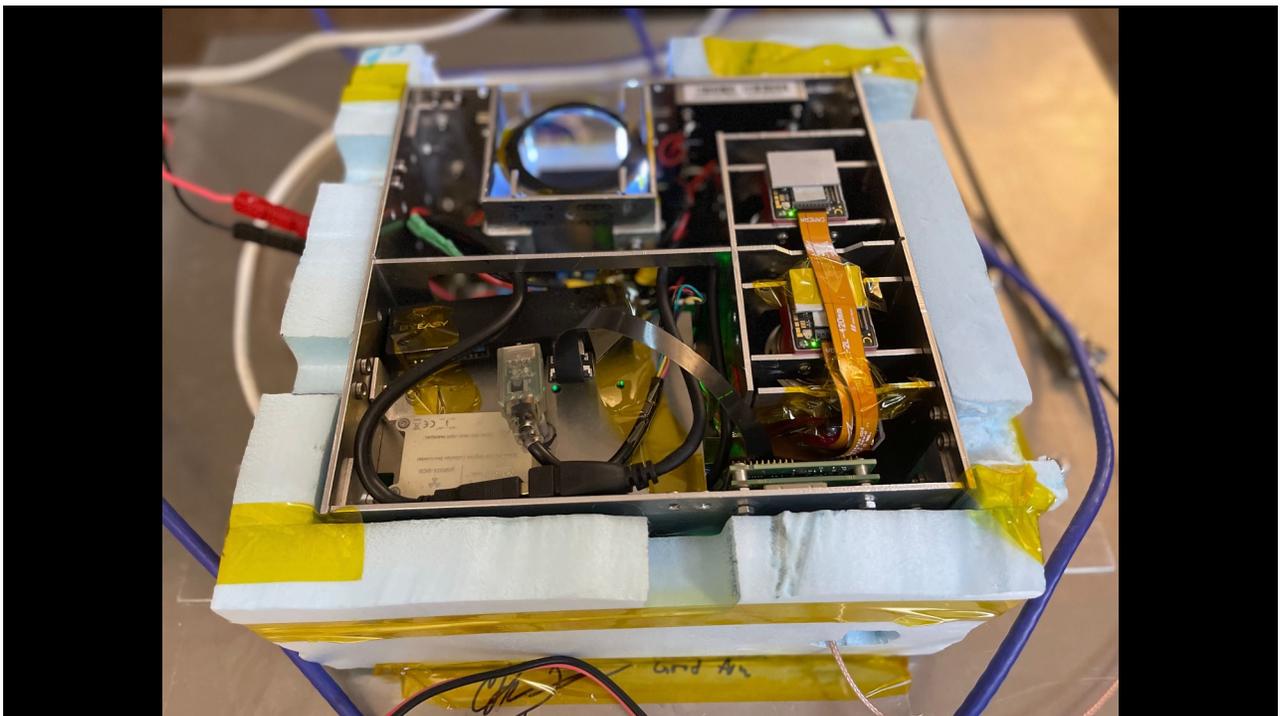
Additional Success: Can we **TRAIN** QML on our edge computing device during flight by utilizing a real IBM quantum computer on the ground?

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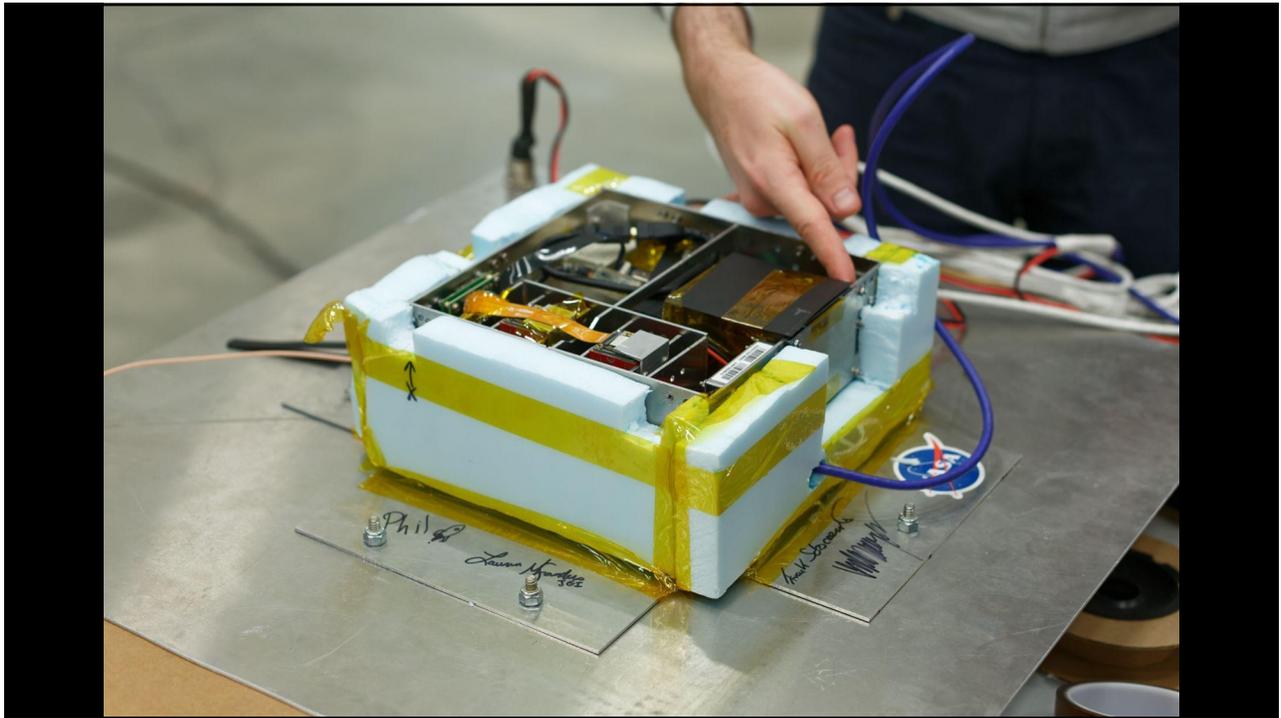
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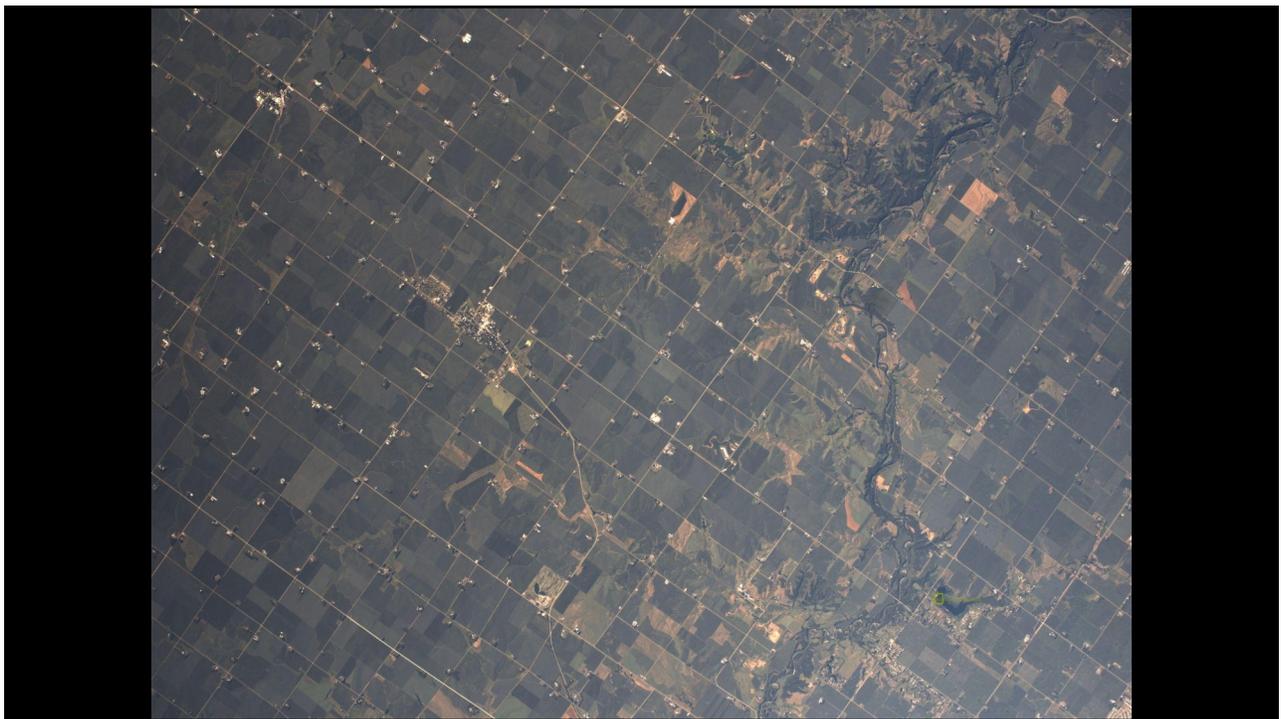
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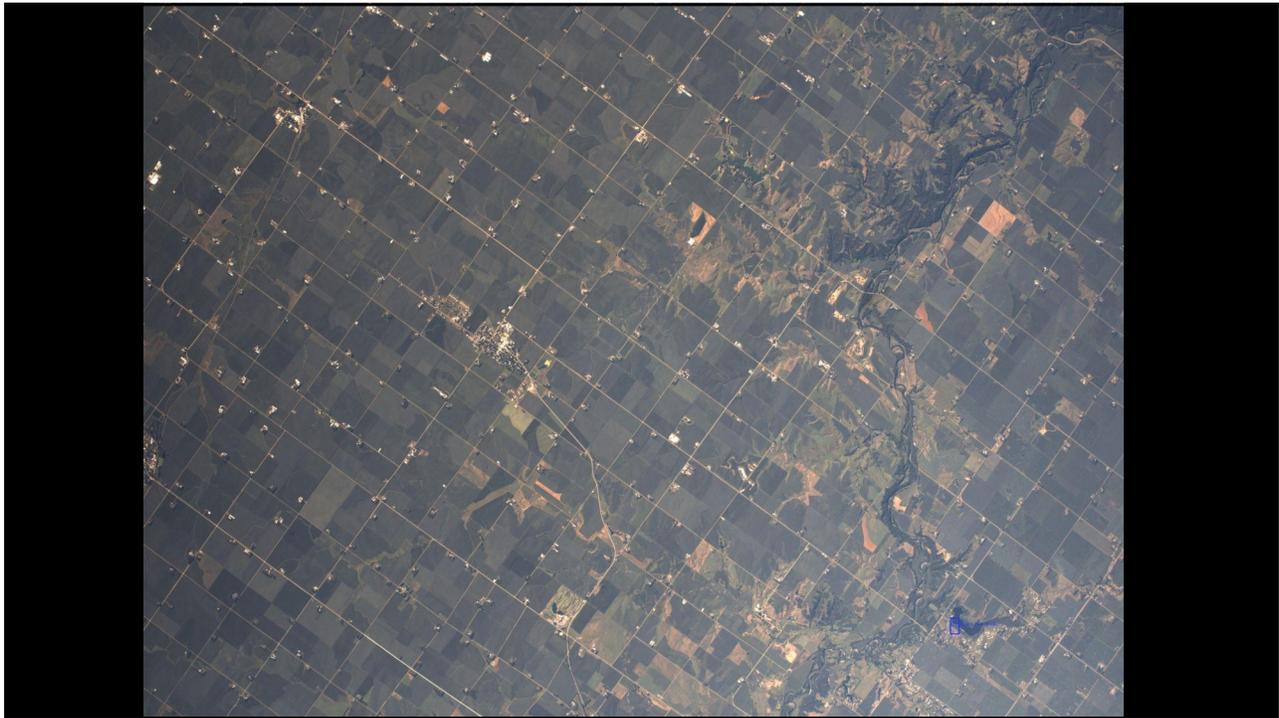
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Procurement

The screenshot shows a FedEx tracking page for a shipment with tracking number 8148-1544-3875. The status is 'Pending' with a 'CLEANANCE DELAY' in Fort Collins, CO. A progress bar shows the shipment is currently at the 'CLEANANCE DELAY' stage. The page includes a 'TRACK ANOTHER SHIPMENT' button, a 'SIGN TIME' button, and a 'GET STATUS UPDATES' link. A note indicates that the shipment requires importer registration for clearance.

arrow.com

Dam it! I was out yesterday with my sister as she got a mechanical elbow at Denver Health, and didn't make the usual follow-up call with my Returns team. They didn't see my email requesting a reship until *after* the module was already restocked, and it was scooped up the moment it appeared in inventory. Your sales credit and credit card refund should post today.

Waiting for the product manager to see if they will release another unit, but I think the reserves are all allocated. The PM is out until next week, though, so I checked with other suppliers. Mouser has 1 unit, and there are some other TX2 models in stock here and there. Here's a comparison: <https://www.nvidia.com/en-us/autonomous-machines/embedded-systems/jetson-tx2/>

Please don't give up on us - we really do know our behinds from our elbows!

Andrew | Arrow Digital Group
Domestic: 1-855-326-4757
International: 1-303-305-5700

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9 week lead time

4 week lead time

11 month lead time-September 2022

6-8 week lead time

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Out of Stock

Product Index > Sensors, Transducers > Accessories > Allied Vision, Inc. 12316 Share



12316

Digi-Key Part Number	2285-12316-ND
Manufacturer	Allied Vision, Inc.
Manufacturer Product Number	12316
Supplier	Allied Vision, Inc.
Description	CABLE CSI-2 120MM
Manufacturer Standard Lead Time	3 Weeks
Customer Reference	<input type="text" value="Customer Reference"/>

0 In Stock

[Check Lead Time](#)
[Request Stock Notification](#)

QUANTITY

[Add to Cart](#)

[Add to List](#)



Lens: “ Hi Sara, This was supposed to be here 1/24 and I have not received it.”

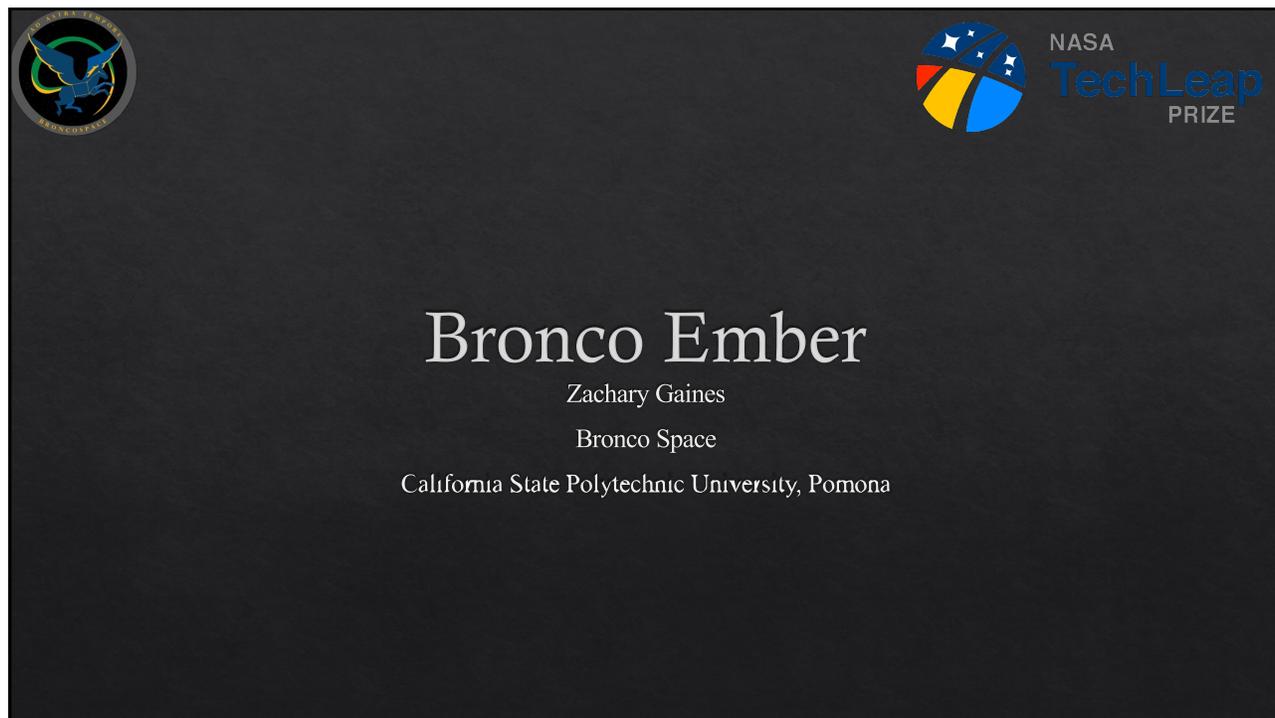
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The poster features a large background image of a white parachute with red suspension lines against a black sky. In the top right corner, there is the NASA logo and the text "National Aeronautics and Space Administration". A collage of six smaller images is positioned on the right side, showing various space-related activities: a person working with a transparent container, a colorful parachute, a person in a lab coat, a rocket launch, a satellite component, and a person working with a yellow container. In the bottom left corner, the text reads "NASA Flight Opportunities", "Community of Practice" (in red), "Zachary Gaines | September 2022", and "www.nasa.gov" at the very bottom.

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The poster has a dark grey background. In the top left corner is a circular logo with a blue eagle and the text "TECHLEAP PRIZE". In the top right corner is the NASA TechLeap PRIZE logo, which includes the NASA logo and the text "NASA TechLeap PRIZE". The main text in the center reads "Bronco Ember" in a large white serif font, followed by "Zachary Gaines", "Bronco Space", and "California State Polytechnic University, Pomona" in a smaller white sans-serif font.

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Overview

Bronco Ember A Nascent Wildfire Detection System

- ◇ Edge Computing Capabilities
- ◇ Multi-Spectral Imaging
- ◇ Targeting 85% Success Rate In Being Able To Detect Wildfires
- ◇ Fire Spread Prediction
- ◇ Supported Through The NASA TechLeap Autonomous Observation Challenge No. 1

Components

- ◇ 2 DOF gimbal
- ◇ InGaAs SWIR camera
- ◇ NVIDIA Jetson Xavier NX
- ◇ Artificial Intelligence Software





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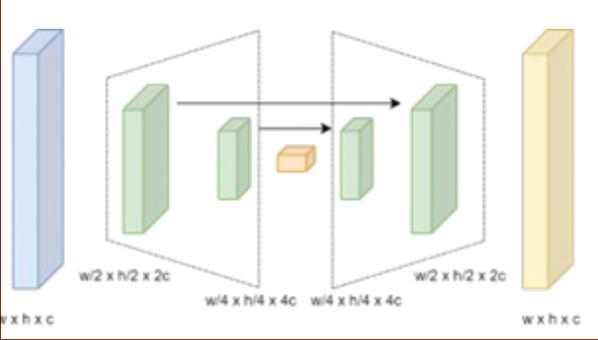


AI Software

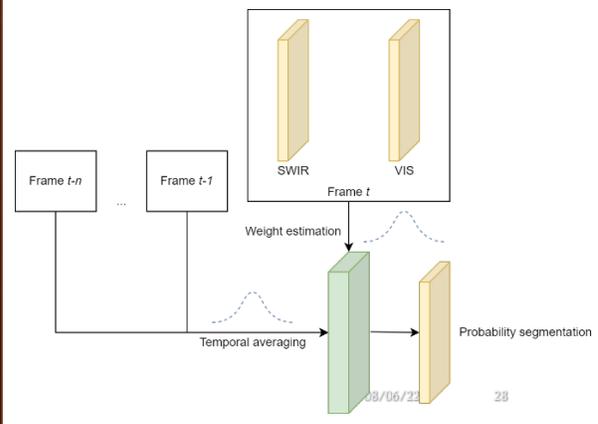
Segmentation and Localization Networks

- ◇ CNN-Style Processing
- ◇ Bayesian Neural network





$w/2 \times h/2 \times 2c$
 $w/4 \times h/4 \times 4c$
 $w/4 \times h/4 \times 4c$
 $w/2 \times h/2 \times 2c$
 $w \times h \times c$



Frame $t-n$... Frame $t-1$... Frame t
 SWIR VIS
 Weight estimation
 Temporal averaging
 Probability segmentation
 08/06/22 28

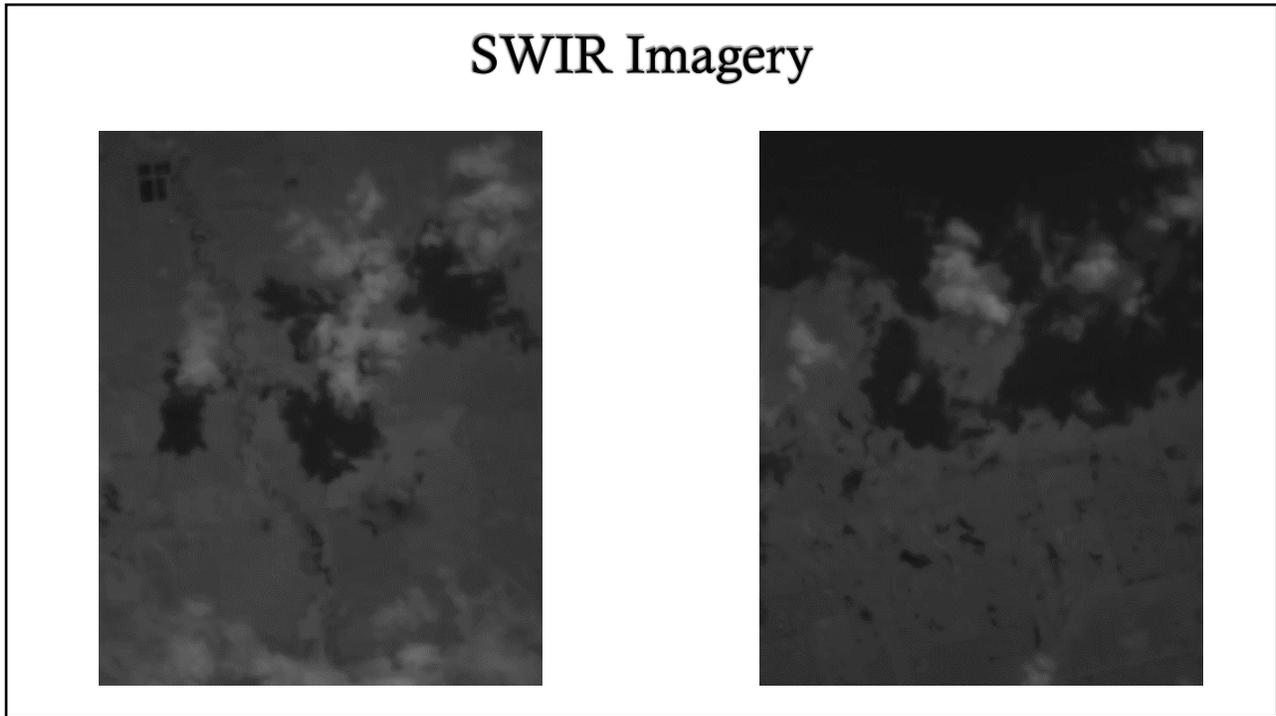
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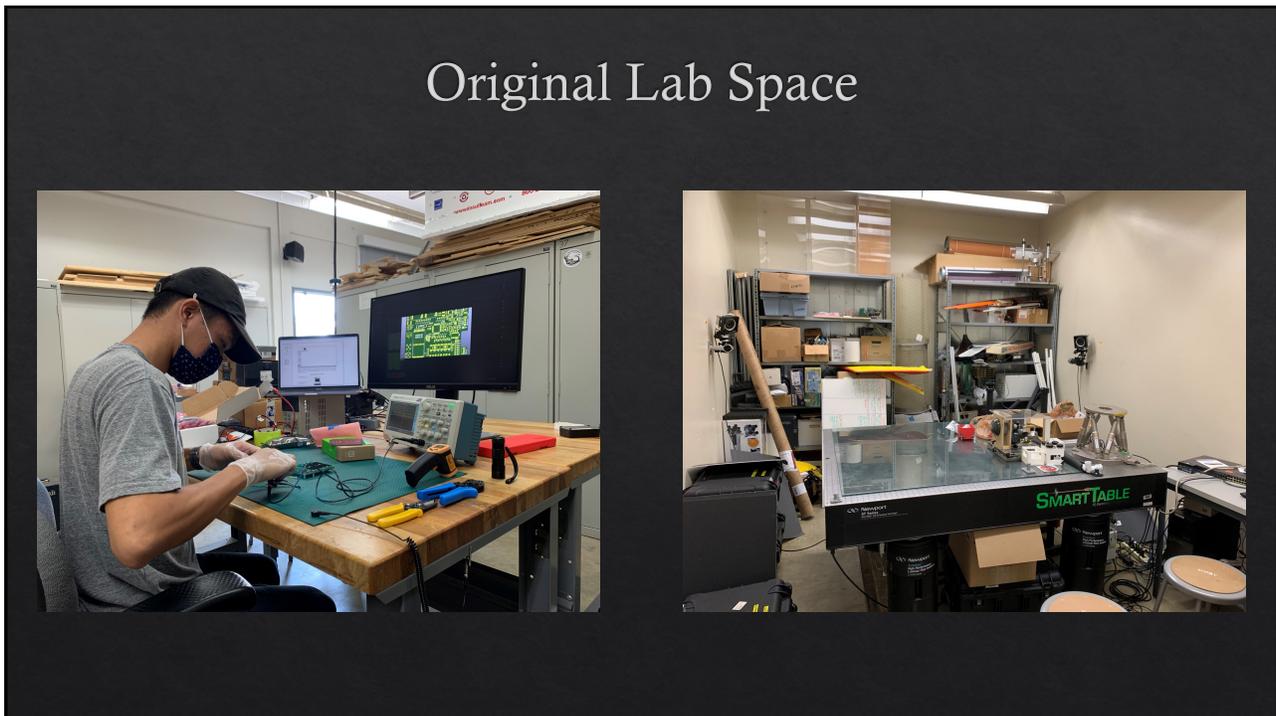
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Bronco Space-ICON

